Fact Sheet

CRREL INSTRUMENTED VEHICLE

INTRODUCTION

The CRREL Instrumented Vehicle (CIV) is one of the most sophisticated vehicles ever developed for the purpose of enhancing knowledge of the tire/surface interface in various cold regions environments. The CIV can perform various mobility tests (traction, resistance, and maneuverability) using different tires, traction aids, and vehicle configurations on a range of terrain surfaces including dry, wet, snow-covered, and ice-covered pavement, and freezing–thawing ground. The data obtained from these tests are used to determine and predict vehicle performance on winter terrain.

The vehicle, originally a stock American Motors Corporation Jeep Cherokee, was configured for research in 1978. CRREL acquired the vehicle in 1980 and began using it to study winter mobility. Its instrumentation is continually being upgraded and enhanced.

VEHICLE ELEMENTS

- Velocity sensors for true wheel and vehicle speed
- Data acquisition/computer
- Winch
- Dual-caliper disk brakes and lockout hubs on each wheel
- Electronic inclinometer and triaxial accelerometers
- Control valves for front and rear brakes
- Triaxial load cells on each wheel
- Linear motion potentiometer to measure turning angles

RESEARCH AREAS

- Winter traction testing
- Research on tire efficiency and capability under winter conditions
- Traction coefficient of winter roadway and runway surfaces
- Traction aids (tire chains) for snow, ice, and frozen ground
- Off-road mobility on snow, ice, and freezing–thawing ground
- Vehicle mobility research for combat operations support
- Mobility modeling for vehicle design, operation, and procurement
- Environmental impacts of off-road and unsurfaced road traffic

POINTS OF CONTACT

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